Economic Development Factor Analysis--Based on Transnational Data Research

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Abstract: In 2019, in the context of the decline of the overall world economic growth, 42 countries as a sample were classified by advanced economies, developing economies and emerging economies. We observe the different performance of GDP per capita of these three types of economies in the environment of overall world economic growth declining, and the possible factor shares for this phenomenon. Based on the comprehensive research and reference of relevant literature, this paper observes the contribution share of various components of GDP in advanced economies, developing economies and emerging economies in 2019, and tests the correlation between the four components of GDP (Final consumption expenditure, Investment proportion, Imports, Exports) and GDP per capita by multiple linear regression. We also compare different types of economies. We conclude from the regression results between the four components of GDP and GDP per capita in 42 countries: generally speaking, the growth of investment and imports has a negative impact on GDP per capita, while consumption and exports have a positive one on GDP per capita.

1. Introduction

In the global economic slowdown, we can find that there is an obvious gap in economic growth capacity of different types of economies, for example, in the comparison between developed and developing countries, developed countries and emerging economies, and developing countries and emerging economies. We believe that there are differences in the internal factors driving economic growth in developed countries, developing countries, and emerging economies. Therefore, we expect to infer the reasons for the differences in factor share of economic growth among the three types of economies, in the context of economic slowdown, by comparing the contribution share of each component of GDP with GDP in 2019.

In this paper, the analysis of the economic situation looks at 2019 before the outbreak of COVID-19 and downward pressure on the world economy caused by it. In view of the whole world economy analysis we can see, the 2019 world economic growth in the overall slow, a new industrial revolution has been slow to the future and because the major industry of labor demand is becoming saturated, and unemployed population continues to increase, even the unemployment rate rose in the main developed economies. The growth of the world economy still depends on global trade a lot. In this context, unilateralism and trade protectionism remain the most serious risks threatening global economic growth. Under the influence of China-U.S. trade war, Brexit, E.U. sanctions against Russia and other factors, the economy of major economies is showing a synchronous decline trend. The global manufacturing industry is weak while the growth of international trade is slow, and the global monetary policy is dominated by easing. According to the data provided by the World Bank, we respectively target the developed economies that may be ignored sometimes by the academic community.

Comparing economic activities of the national economy of typical developing countries and emerging economies, the contribution share of GDP and the relationship with its components, it is worth noting that in 2019, even emerging economies and developing countries also suffer the downward pressure on economic development. But even with downward pressure on growth rates, they are still the main drivers of world economic growth, especially Asian economies.

Let us be more concrete about developed countries' stagnation. In 2019, the economic growth of developed countries suffered stagnation and even recession, and economic stagnation even occurred in different types of economies. Under the global trade tensions, U.K.'s departure from the E.U. and the trade sanctions imposed by the U.S. have brought serious negative effects on the E.U. and European economy, while the E.U.'s internal labor supply and manufacturing encounter shortages, and the influx of refugees actually increased the burden of the E.U. and the social instability factors, the manufacturing of Germany, which is EURO zone's largest economy was in the downturn, with investment markets expressing concern about the state of the E.U. economy. Due to the decrease in sales of refined petroleum products, France's export shows a slowing trend. Regardless of the actual year-on-year growth rate, the actual growth rate is overall stagnant. But France has been less affected by the trade war in the United States.

Affected by several delays in Brexit, the U.K.'s economic situation fluctuated significantly in 2019. The growth of the service sector and construction industry was offset by the weakness of the industrial production industry, especially the automobile manufacturing industry. On the whole, Brexit intensified investors' concerns about the European market and hit the confidence in European trade and investment. In addition, the U.S. manufacturing index and annual consumption index decreased in 2019, and the economic growth rate declined. The Treasury bond yield has been inverted for many times. The Federal Reserve has adopted the policy of interest rate reduction to provide cushion, and the export has been hit by the impact of the China-US trade war.

The economic development of emerging economies and developing countries was also challenged. Economic development of developing countries and typical emerging economies was challenged by increasing global trade frictions and decreasing market demand, which makes structural constraints such as unreasonable allocation of resources more prominent in developing countries and emerging economies.

Both among BRICS countries and other geographically strong developing countries, we can see great divergence in their economic development, but generally speaking, the decline in economic growth caused by weakened economic growth momentum, trade recession and investment reduction is still common among them.

Russia's substantial economy has been hit hard by trade wars and sanctions, but its dependence on energy exports has decreased, while South Africa has fallen into a technical recession. In 2019, China's total GDP still maintained steady growth, industrial production and service industries continued to develop, but the high-tech manufacturing industry was hit by the challenges of policies of U.S., foreign trade showed a countertrend growth, and GDP growth rate declined due to degrading demographic dividend. Due to the influence of advantageous geographical location and the actual superiority of the overall foreign trade situation, India's total GDP still keeps growing, but the growth rate declines significantly due to the joint drag of consumption and investment. Meanwhile, it is difficult for India to transform the economy, and the industrial production and high-tech industry grow slowly. In 2019, the Amazon Forest fires directly hit Brazil's overall economy, and changes in international market prices and overall economic transformation also hit its resource exports.

2. Literature Review

In late 20th century and early 21st century, emerging economies (also known as emerging markets) have attracted more and more global attention in terms of global division of labor and economic growth. In 1978, the Organization for Economic Cooperation and Development (OECD) listed ten countries and regions including the 'Four Asian Tigers' as 'newly industrialized countries (regions)' [1]. In 1993, the then U.S. President, Bill Clinton made it clear in the U.S. national export strategy that

the U.S. would target ten “emerging markets”, such as China, India and Indonesia, as its main trade partners. Since the beginning of the 21st century, when economists talk about emerging economies, they refer to more and more countries. For example, The Economist once proposed the ‘Next-11’ in addition to the BRICS countries as representatives of emerging economies [1]. At the same time, the international economic status of emerging economies has risen rapidly. An important sign is that G20 has replaced G7 as the main forum for international economic cooperation [2]. We could say that with the continuous development of globalization, more and more developing countries have attracted the attention of research institutions and economists for their steady and rapid economic growth. The efficient recovery performance of emerging market countries after the global financial crisis has deepened this attention [3]. However, in spite of the widespread attention of emerging economies, there is no unified standard for defining emerging economies. Sometimes “emerging economies” is used too broadly to refer to all “developing countries” [2]. That is to say, in the broadest sense, any economy that is lower than the standard designated by international organizations for high-income economies can be called “emerging economy”, but such simple classification makes the characteristics of emerging economies very vague[2]. In their research, Zhang and Tian refer to several criteria that research institutions and scholars like to use, such as economic growth rate, policy institutions, export growth, financial market openness, and so on. [4], for example, refer to emerging economies as “low-income countries that have achieved rapid growth mainly through economic liberalization” [5].defined emerging market countries as economies that gradually transform from government orientation to free market orientation. Zhang and Tian also note that with the emergence of rapidly growing developing countries, there is a new trend in defining emerging economies: grouping specific countries into groups. These countries are often widely recognized as the representatives of emerging economies in various aspects. The above-mentioned “BRICS” and “Next-11” are famous examples. This article uses such a way to group advanced economies and emerging economies.

Since the outbreak of the financial crisis in 2008, a number of institutions and scholars have pointed out the strong recovery performance of emerging economies, believing that emerging economies can better withstand economic shocks. [6], for example, points out that excessive financing in developed countries prevents them from achieving efficient economic recovery, while emerging economies are better able to avoid information asymmetry in capital accumulation and thus are less vulnerable to financial crises. However, many studies have shown that the status of emerging economies in the global value chain and international division of labor is not commensurate with their economic development. For example, [7], pointed out in their study that emerging economies become the source and recipient of spillover effects of the global economy due to their superior economic performance. Yet the spillover effects between emerging and advanced economies are asymmetrical: emerging economies apparently accept passively more than they give and affect. This suggests that emerging economies are more dependent on external economies [8].used the examples of the United States and India to illustrate that emerging economies are vulnerable to international uncertainties, thus exacerbating domestic uncertainties. [9] Also explained that emerging economies are more susceptible to the influence of developed economies from the perspective of monetary policy and bond market. In terms of the benefits brought by participating in Global Value Chains (GVCs), [10] pointed out that due to the practical differences in the development of emerging economies, some emerging economies cannot benefit from the global division of labor. [11] Pointed out from the perspective of demand, that emerging economies can be more easily prone to excessive external dependence, which also makes it easier for global cyclical factors to affect emerging economies compared with developed countries. We note that comparisons between emerging and advanced economies focus more on their respective vulnerability to external influences. Based on the differences between emerging economies and developed economies pointed out in previous research, we hope to further compare the differences in economic growth between them and developing countries in general from the perspective of GDP per capita. To be more specific, this article hopes to compare the contribution rate of each component of GDP to economic growth from the perspectives of consumption, investment and import and export trade, so as to explore the differences between different types of economies.

As for the factors affecting economic growth of developed and emerging economies, many viewpoints have been put forward by scholars. For example, [12] took BRICS countries as an example in his study, analyzed and pointed out that the economic growth mode of emerging economies represented by BRICS countries was still in a relatively extensive state, and expanding consumption and promoting domestic circulation were urgent problems for BRICS countries and even all emerging economies. The study of [13] also pointed out the insufficient endogenous impetus for the growth of emerging economies and the importance of expanding demand for sustained economic growth of emerging economies. For emerging economies in East Asia, some scholars, starting from the long-term and short-term relationship between import and export trade and outward investment, argue that in the short term, import and export trade significantly drives outward foreign direct investment (OFDI) of East Asian economies. In the long run, OFDI can create import and export trade [14]. From the perspective of bank capital, [15] pointed out the important impact of bank capital regulation on the macro-economy of East Asian emerging economies. In addition, some scholars have carried out a large number of studies on macroeconomic factors such as knowledge trade, technological progress and population factors [16] [17], In general, although there are many academic studies on the contribution rate of investment, consumption, import and export trade and other GDP components to GDP of emerging economies [18], such studies focus more on one country or several countries (such as China). Intuitive data analysis and comparative studies on emerging economies, advanced economies and developing economies in general are still lacking. Therefore, from the perspective of investment, consumption and import and export trade, this article tries to analyze the differences and similarities of their contribution rate to GDP per capita among different types of economies.

3. Quantitative Analysis

3.1 Variable Selection

In order to analyze the factors affecting economic aggregate, this paper selects variables such as final consumption expenditure (consumption), gross capital formation (investment), imports and exports of goods and services (imports & exports), and makes a regression analysis using the cross-section data of 42 countries in 2019. The main reason we choose 2019 as the macroeconomic reference year is that when the pandemic started in 2020, markets and macro economies around the world were strongly affected. Take the real estate market of the U.S. as a brief example, COVID-19 has affected the choice of transaction mode of market agents, making real estate transactions in this fall and imminent winter, traditionally a slow season, show an obvious upward trend. In addition, the impact of COVID-19 on international economic cooperation, imports and exports is also evident. So we choose 2019 as close to now as possible without being affected by the pandemic.

In our analysis, GDP takes the logarithm of GDP per capita, and consumption, investment, imports & exports are measured by the aggregate of the relevant components for each country in 2019. These figures are all measured in today's dollars (not then), and the data we use are from the World Bank database. Since we measure imports & exports respectively, rather than net export, the sum of the figures do not equal the total GDP of each country in that year. The sample countries selected are Japan, the United Kingdom, Canada, Australia, Switzerland, Norway, Israel, Denmark, the United States, Germany, France, Italy, Spain, Netherlands, Belgium, Austria, Finland, Portugal, Greece, Ireland, Sweden, (People's Republic of) China, South Africa, India, the Russian Federation, Brazil, Pakistan, Indonesia, Islamic Republic of Iran, Republic of Korea, Philippine, Mexico, Turkey, Vietnam, Saudi Arabia, Argentina, Chile, Peru, Thailand, Singapore, Malaysia, Poland. In our analysis, we will categorize countries from Japan to Sweden as "Advanced Economies". Countries from (People's Republic of) China to Vietnam are sorted as "Typical Emerging Economies" (they all come from the BRICS or Next-11). Countries from Saudi Arabia to Poland are classified as "General Developing Economies" (neither developed nor typical emerging economies).

3.2 Statistical Description

Figure 1 shows the changes in GDP per capita of each country in 2019. It can be seen that the absolute value gap of GDP is still quite obvious. Among them, the economic level of advanced economies is generally higher than that of developing economies, and the difference in economic development is quite obvious.

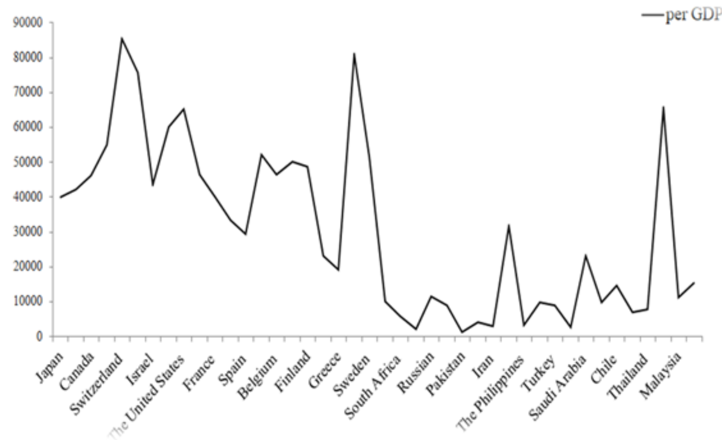

Figure 1. GDP per capita of forty-two chosen economies.

To further observe the relationship between variables, a scatter plot can be drawn, as shown below:

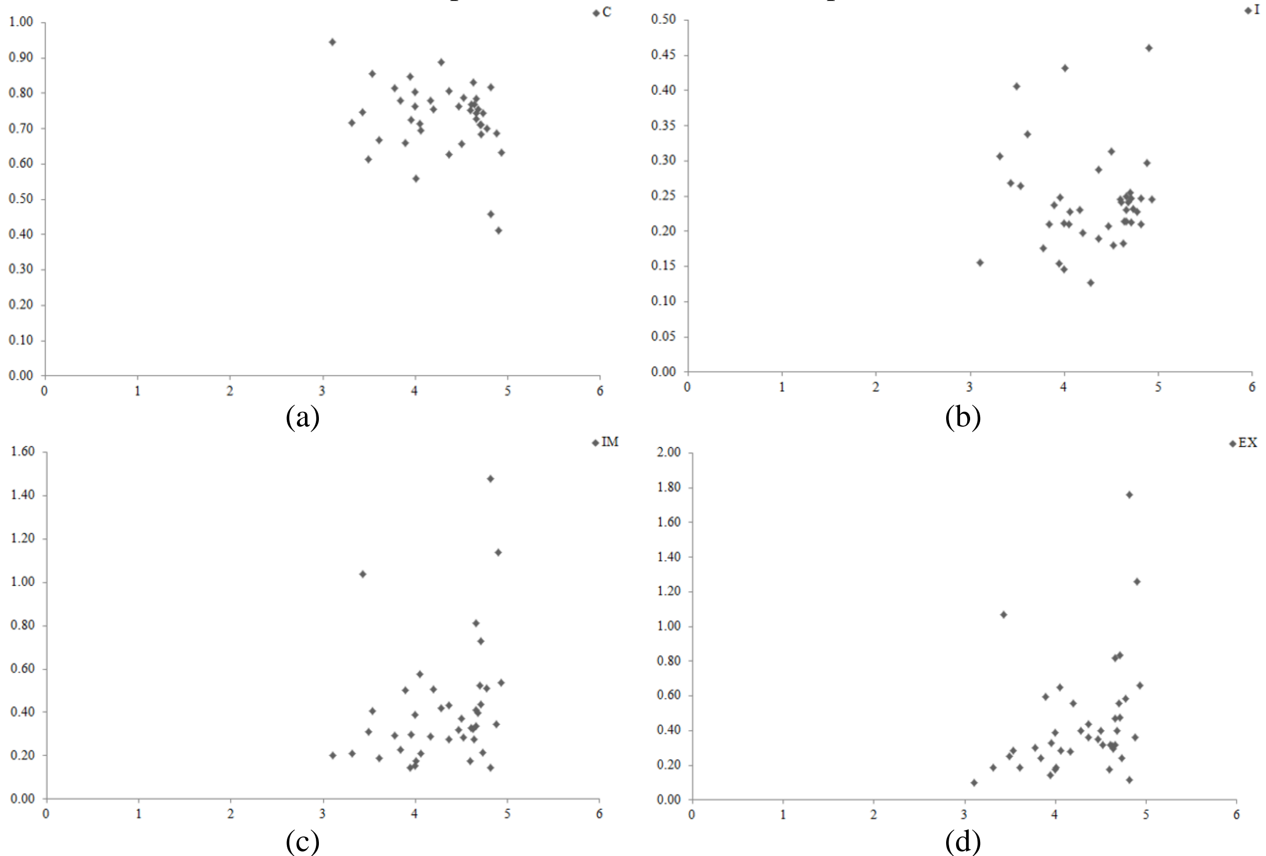

Figure 2. Scatter plots about Consumption,
Investment, Imports and Exports of forty-two chosen economies.

3.3 Empirical Analysis

In order to comprehensively study the influencing factors of each country's economy, analyze the law of economic development of each country and predict the trend of future economic growth, a multiple linear regression model was established in which the explained variable was the log value of

each country's GDP per capita (y_i), explanatory variables include Consumption share (x_{1i}), Investment proportion (x_{2i}), Imports (x_{3i}) and Exports (x_{4i}).

$$lny_i = \beta_0 + \beta_1 lnx_{1i} + \beta_2 lnx_{2i} + \beta_3 lnx_{3i} + \beta_4 lnx_{4i} + ln\varepsilon_i \quad (1)$$

Utilizing the least squares to regress the above equation (1), main regression results was obtained:

Table 1. Baseline Result.

Variables	GDP per capita
lnC	0.1 (-0.399)
lnI	-0.582 (-0.44)
lnEX	2.583*** (-0.936)
lnIM	-1.703 (-1.079)
Constant	-0.443 (-1.853)
Observations	42
R-squared	0.387

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

According to the above regression results, in 42 countries as a whole, export has the most significant impact on per capita GDP, and per capita GDP increases by 2.583% on average when export increases by 1%. In addition, consumption promotes GDP growth, while import and investment restrain GDP growth, but the impact is not significant. The effect of technological progress of export on attracting foreign investment and promoting employment to transfer surplus labor can also be reflected in the influence of GDP in the research, the share of consumption, the proportion of investment and even the contribution of imports to the economy are more or less affected by exports. In order to further compare the differences of economic influencing factors of different types of countries, this paper carries out regression respectively for developed and developing countries and emerging economies, and the results are shown in the table below.

Table 2. Sample Regression Result.

	Developed	Developing	Emerging
Variables	GDP per capita	GDP per capita	GDP per capita
lnC	-0.678*** (0.170)	-0.159 (1.564)	0.026 (0.640)
lnI	0.834*** (0.216)	-0.029 (1.506)	-0.573 (0.588)
lnEX	0.508 (0.754)	2.719 (2.297)	2.743*** (1.016)
lnIM	-0.597 (0.809)	-2.451 (2.689)	-1.924 (1.144)
Constant	4.259*** (0.792)	3.049 (15.739)	0.711 (3.314)
Observations	21	8	13
R-squared	0.6073	0.5876	0.5990

As shown in Table 2, for developed countries, consumption and investment have a more significant impact on economic development. For emerging economies, import and export have a more significant impact on the economy. For developing countries, it seems as if various indicators have no marked

impacts on economic development. We infer that this is to some extent related to the small sample size. This is relatively consistent with economic facts, lots of emerging economies have an export-oriented economy, so the whole economy is more sensitive for the change of import and export.

4. Conclusion

In conclusion, the results we gained from regression based on forty-two countries, basically we found that investment proportion (I) and imports (IM) have negative effect on GDP per capita among these countries. Especially, the investment proportion which is strongly negatively related to GDP per capita. Each 1% of increase on investment proportion will lead to 1.703% decrease on GDP per capita. Each 1% of increase on imports will lead to 0.582% of decrease on GDP per capita. Moreover, we found that exports (EX) and final consumption expenditure (C) have positive relationship with GDP per capita. And exports play the big deal on having positive influence on GDP per capita. Each 1% of increase on exports will lead to 2.583% of increase on GDP per capita. Each 1% of increase on consumption will lead to 0.1% of increase on GDP per capita. As can be seen from the inter-group comparison, investment and exports play a significant role in driving the GDP of developed and emerging economies respectively. And this is consistent with our previous hypothesis. According to literature research and the world economic situation, the investment effect in developed economies is very obvious. Compared with developing economies, investment also accounts for a larger proportion in the total GDP in developed economies. As for emerging economies, most of them are still in an export-oriented state and are vulnerable to the spillover effects of foreign investment. This is why emerging economies must attach importance to promoting the positive impacts of consumption and domestic investment on GDP in their development.

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